

# NPN Darlington Transistor BCV27

# **Description**

This device is designed for applications requiring extremely high current gain at collector currents to 1.0 A. Sourced from process 05.

#### **ABSOLUTE MAXIMUM RATINGS**

(T<sub>A</sub> = 25°C unless otherwise noted.) (Notes 1, 2)

Symbol	Parameter	Value	Unit
$V_{CEO}$	Collector-Emitter Voltage 30		V
$V_{CBO}$	Collector-Base Voltage	40	V
V <sub>EBO</sub>	Emitter-Base Voltage	10	V
I <sub>C</sub>	Collector Current - Continuous	1.2	Α
T <sub>J</sub> , T <sub>STG</sub>	Operating and Storage Junction Temperature Range	-55 to +150	°C

Stresses exceeding those listed in the Maximum Ratings table may damage the device. If any of these limits are exceeded, device functionality should not be assumed, damage may occur and reliability may be affected.

- 1. These ratings are based on a maximum junction temperature of 150°C.
- These are steady-state limits. onsemi should be consulted on applications involving pulsed or low-duty-cycle operations.

### THERMAL CHARACTERISTICS

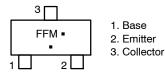
(T<sub>A</sub> = 25°C unless otherwise noted.) (Note 3)

Symbol	Parameter	Max	Unit
$P_{D}$	Total Device Dissipation	350	mW
	Derate Above 25°C	2.8	mW/°C
$R_{\theta JA}$	Thermal Resistance, Junction-to-Ambient	357	°C/W

3. PCB size: FR-4, 76 mm x 114 mm x 1.57 mm (3.0 inch x 4.5 inch x 0.062 inch) with minimum land pattern size.

SOT-23 CASE 318

#### **MARKING DIAGRAM**



FF = Specific Device Code

M = Date Code= Pb-Free Package

(Note: Microdot may be in either location)

#### **ORDERING INFORMATION**

Device	Package	Shipping
BCV27	SOT-23 (Pb-Free, Halide Free)	3,000 / Tape & Reel

†For information on tape and reel specifications, including part orientation and tape sizes, please refer to our Tape and Reel Packaging Specification Brochure, BRD8011/D.

## ELECTRICAL CHARACTERISTICS (T<sub>A</sub> = 25°C unless otherwise noted.)

Symbol	Parameter	Test Conditions	Min	Тур	Max	Unit
V <sub>(BR)CEO</sub>	Collector-Emitter Breakdown Voltage	I <sub>C</sub> = 10 mA, I <sub>B</sub> = 0	30	_	-	V
V <sub>(BR)CBO</sub>	Collector-Base Breakdown Voltage	$I_C = 10 \mu A, I_E = 0$	40	_	_	V
V <sub>(BR)EBO</sub>	Emitter-Base Breakdown Voltage	I <sub>E</sub> = 100 nA, I <sub>C</sub> = 0	10	_	-	V
I <sub>CBO</sub>	Collector Cut-Off Current	V <sub>CB</sub> = 30 V, I <sub>E</sub> = 0	-	_	0.1	μΑ
I <sub>EBO</sub>	Emitter Cut-Off Current	V <sub>EB</sub> = 10 V, I <sub>C</sub> = 0	-	_	0.1	μΑ
h <sub>FE</sub>	DC Current Gain	I <sub>C</sub> = 1.0 mA, V <sub>CE</sub> = 5.0 V	4000	_	-	
		I <sub>C</sub> = 10 mA, V <sub>CE</sub> = 5.0 V	10000	_	-	
		$I_C = 100 \text{ mA}, V_{CE} = 5.0 \text{ V}$	20000	_	_	
V <sub>CE</sub> (sat)	Collector-Emitter Saturation Voltage	I <sub>C</sub> = 100 mA, I <sub>B</sub> = 0.1 mA	-	_	1.0	V
V <sub>BE</sub> (sat)	Base-Emitter Saturation Voltage	I <sub>C</sub> = 100 mA, I <sub>B</sub> = 0.1 mA	-	_	1.5	V
f <sub>T</sub>	Current Gain - Bandwidth Product	I <sub>C</sub> = 30 mA, V <sub>CE</sub> = 5.0 V, f = 100 MHz	_	220	_	MHz
C <sub>c</sub>	Collector Capacitance	V <sub>CB</sub> = 30 V, I <sub>E</sub> = 0, f = 1.0 MHz	_	3.5	-	pF

Product parametric performance is indicated in the Electrical Characteristics for the listed test conditions, unless otherwise noted. Product performance may not be indicated by the Electrical Characteristics if operated under different conditions.

### BCV27

### **TYPICAL CHARACTERISTICS**

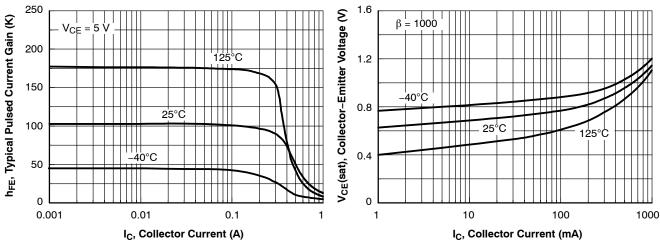


Figure 1. Typical Pulsed Current Gain vs. Collector Current

Figure 2. Collector-Emitter Saturation Voltage vs. Collector Current

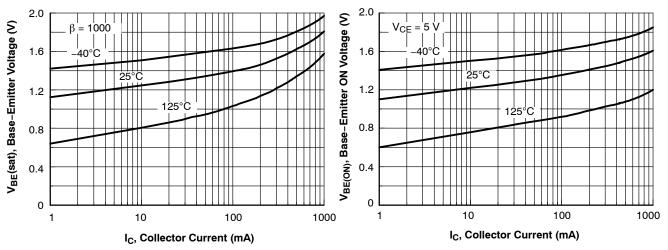


Figure 3. Base–Emitter Saturation Voltage vs.
Collector Current

Figure 4. Base Emitter On Voltage vs.
Collector Current

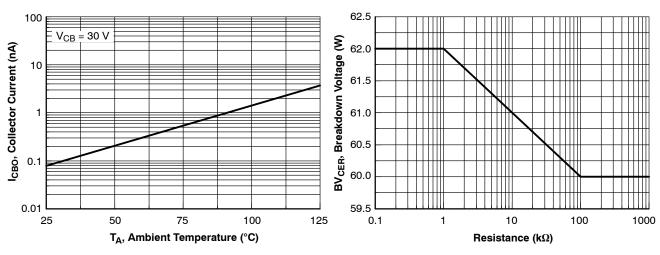


Figure 5. Collector Cut-Off Current vs.

Ambient Temperature

Figure 6. Collector–Emitter Breakdown Voltage with Resistance Between Emitter–Base

# TYPICAL CHARACTERISTICS (Continued)

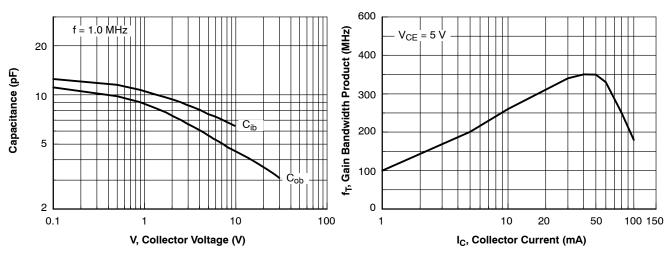


Figure 7. Input and Output Capacitance vs. Reverse Voltage

Figure 8. Gain Bandwidth Product vs. Collector Current

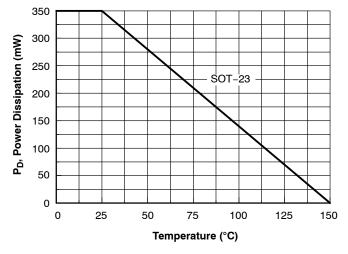


Figure 9. Power Dissipation vs. Ambient Temperature

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